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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PUBLIC ROADS  
DIVISION OF AGRICULTURAL ENGINEERING

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MONTHLY NEWS LETTER

WASHINGTON, D. C., MARCH 20, 1929.

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: THE FOLLOWING ARE THE REQUISITION  
: NUMBERS FOR THE FOURTH QUARTER OF THE  
: FISCAL YEAR, BEGINNING APRIL 1.  
:  
: GAS, OIL, AND GREASE, A.E. 363  
:  
: REPAIR AND UPKEEP OF MOTOR  
: VEHICLES, INCLUDING GARAGE RENT,  
:  
: AE 364  
:  
: REPAIRS TO ENGINEERING INSTRU-  
: MENTS AND OFFICE EQUIPMENT, AE 365  
:  
: PURCHASES OF MISCELLANEOUS FIELD  
:  
: ENGINEERING EQUIPMENT AND SUPPLIES  
:  
: AE 366.  
:  
: WHEN PURCHASES ARE MADE THAT COME  
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: UNDER THESE HEADINGS, NOTATION OF REQU-  
:  
: SITION NUMBER SHOULD BE MADE ON WHITE  
:  
: VOUCHER OR EXPENSE ACCOUNT.  
:.....

FEBRUARY 25-27 THE ADVISORY COMMITTEE, COLLEGE DIVISION, AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS, MET IN WASHINGTON. THE HOLDING OF THE MEETING HERE WAS IN LINE WITH A POLICY THAT HAS BEEN FOLLOWED FOR SEVERAL YEARS. AGRICULTURAL ENGINEERING QUESTIONS OF MUTUAL INTEREST TO THE SOCIETY, THE COLLEGES, AND THE DEPARTMENT WERE DISCUSSED.

AS REPORTED IN THE DECEMBER NEWS LETTER, A. A. YOUNG HAS RECENTLY BEGUN SOME EXPERIMENTS IN SOUTHERN CALIFORNIA TO DETERMINE EVAPORATION AND TRANSPIRATION LOSSES FROM SOIL ON WHICH NATIVE VEGETATION IS GROWING. A NUMBER OF SOIL TANKS HAVE BEEN INSTALLED TO CARRY ON THIS WORK AND MR. YOUNG HAS SENT IN THE FOLLOWING DESCRIPTION OF THE METHODS OF INSTALLATION:

"SOIL MOISTURE TANKS RECENTLY INSTALLED AT SANTA ANA, CALIF., WERE FILLED BY METHODS WHICH DID NOT MATERIALLY DISTURB THE ORIGINAL SOIL STRUCTURE. DOUBLE TANKS WERE USED, THE INNER FOR SOIL AND THE OUTER FOR WATER. THE OPEN-BOTTOM INNER TANKS, 23 INCHES IN DIAMETER AND SIX FEET DEEP WERE FORCED DOWN OVER A CORE OF UNDISTURBED SOIL



UNTIL FILLED.

"TWO METHODS WERE USED. IN THE FIRST, EACH END OF A CABLE WAS ANCHORED IN THE GROUND SEVERAL FEET FROM THE TANK TO BE FILLED. THE ANCHOR WAS A TYPE USED BY PUBLIC UTILITY COMPANIES FOR ANCHORING GUY WIRES AND WAS READILY INSTALLED IN A HOLE BORED IN THE GROUND WITH A SIX INCH POST HOLE AUGER. AN ANCHOR ROD WAS CONNECTED WITH IT THROUGH A SMALLER HOLE BORED AT RIGHT ANGLES TO THE FIRST AND A CABLE FASTENED TO THE ANCHOR ROD. WITH THE TANK SET MIDWAY BETWEEN THE ANCHORS, THE CABLE WAS PASSED OVER THE TOP OF A SCREW JACK SET UPON TWO SHORT 6X6 INCH TIMBER BLOCKS ON TOP OF THE TANK. THE OPERATION OF THE JACK FORCED THE TANK INTO THE SOIL. AS THE TANK WAS FORCED DOWN MORE BLOCKING WAS NEEDED TO HOLD THE JACK AGAINST THE CABLE UNTIL EVENTUALLY A SIX FOOT TIMBER CRIB SUPPORTED THE JACK. IF THE CABLE WAS SHORTENED DURING THE PROCESS LESS BLOCKING WAS NEEDED.

"TO RELIEVE OUTSIDE FRICTION AN EXCAVATION WAS MADE AROUND EACH TANK, KEEPING THE BOTTOM EVEN WITH OR SLIGHTLY BELOW THE CUTTING EDGE OF THE TANK. AS THE TANK FILLED INTERNAL FRICTION INCREASED, RETARDING PROGRESS. A SHARP, JARRING IMPACT GIVEN THE CRIBWORK BY STRIKING IT WITH A TIMBER BLOCK HELD IN A VERTICAL POSITION MATERIALLY FACILITATED ADVANCEMENT, AND IT WAS POSSIBLE FOR ONE MAN OPERATING THE JACK AND TWO MEN EXCAVATING AROUND THE TANK, TO SINK IT SIX FEET IN ABOUT THREE HOURS.

"IMPACT OF THE TIMBER BLOCK IN ADDITION TO THE PRESSURE OF THE JACK WAS SO SUCCESSFUL THAT AN EFFORT WAS SOON MADE TO FORCE THE TANKS DOWN BY IMPACT ALONE. IT WAS FOUND THAT TWO MEN COULD FILL A SIX-FOOT TANK BY DRIVING IT OVER A CORE OF SOIL CUT AND TRIMMED NEARLY TO SIZE IN THREE HOURS WHICH WAS A SAVING OF ONE MAN'S WORK OVER THE PREVIOUS METHOD.

"IN THE FIRST METHOD TANKS WERE NOT COMPLETELY FILLED UNTIL THEIR TOPS WERE FOUR INCHES BELOW THE GROUND SURFACE. THIS CAN BE PARTLY ACCOUNTED FOR BY COMPRESSION OF THE SOIL WITHIN THE TANK BUT MORE PROBABLY BY A SQUEEZING OUT OF THE SANDY SOIL BELOW THE CUTTING EDGE. TANKS FILLED BY IMPACT ALONE SHOWED NO SUCH LOSS.

"AFTER A TANK WAS FILLED A BOTTOM PLATE WAS JACKED INTO PLACE AND BOLTED, CUTTING OFF THE SOIL COLUMN. THE FILLED TANK WAS THEN HOISTED BY A CHAIN BLOCK ATTACHED TO A TRIPOD, SET IN THE OUTER TANK PREVIOUSLY PLACED IN THE EXCAVATION ALREADY MADE."

CARL ROHWER REPORTS THAT "EXTREMELY COLD WEATHER DURING THE MONTH OF FEBRUARY FOLLOWING A FEW WARM DAYS EARLY IN THE MONTH, MADE POSSIBLE THE CONTINUATION OF THE OBSERVATIONS ON THE EVAPORATION FROM ICE WITH CONTROLLED WIND IN THE LABORATORY. THE RESULTS OF THESE OBSERVATIONS FOR WINDS VARYING BETWEEN 2 AND 16 MILES PER HOUR INDICATE THAT THERE IS AN APPRECIABLE EVAPORATION FROM ICE EVEN IN EXTREMELY COLD WEATHER, AND THE RATE OF EVAPORATION IS HIGHER THAN THE EVAPORATION FROM WATER FOR THE SAME WIND AND DIFFERENCE IN VAPOR PRESSURE. THIS MAY BE DUE TO THE ROUGHENING EFFECT OF THE WIND ON THE ICE WHICH CAUSED AN INCREASE IN THE AREA OF THE EVAPORATING SURFACE. ANOTHER FACTOR WHICH MAY HAVE SOME EFFECT IS THE UNCERTAINTY OF THE PSYCHROMETRIC READINGS IN COLD WEATHER AND AN ATTEMPT IS BEING MADE TO CHECK THE PSYCHROMETRIC READINGS



WITH A DEW POINT HYGROMETER. RESULTS SO FAR ARE NON-CONCLUSIVE."

R. G. HEMPHILL HAS WRITTEN TO THE BERKELEY OFFICE STATING THAT ON SATURDAY, FEBRUARY 23, THE ATTIC OF THE FEDERAL BUILDING IN SAN ANTONIO, TEXAS, CAUGHT FIRE AND WHILE THE FIRE DAMAGE WAS RELATIVELY SMALL, MUCH DAMAGE WAS CAUSED BY WATER. VERY FORTUNATELY THE TWO OFFICES OF THIS DIVISION ARE LOCATED ON THE OPPOSITE SIDE OF THE BUILDING FROM THE FIRE AND ESCAPED ANY MATERIAL DAMAGE. THE FLOOR WAS FLOODED WITH ABOUT AN INCH OF WATER, BUT ALL RECORDS AND SUPPLIES ESCAPED INJURY.

THE FOLLOWING REPORT HAS BEEN RECEIVED AT THE BERKELEY OFFICE: "AGRICULTURAL AND ECONOMIC PHASES OF THE SILVER LAKE IRRIGATION DISTRICT, OREGON," BY W. L. POWERS, R. E. STEPHENSON, W. W. McLAUGHLIN, AND PAUL A. EWING.

GEORGE A. MITCHELL RECENTLY SPENT SEVERAL DAYS IN WASHINGTON, WORKING UP A PROJECT THAT HAS FOR ITS OBJECT THE DETERMINATION OF THE PRACTICABILITY OF USING TOWN SEWAGE FOR THE IRRIGATION OF CROPS, INCLUDING MARKETABLE VEGETABLES. COOPERATION WILL BE WITH THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION AND WITH MR. W. S. MITCHELL OF VINELAND, N.J. WHO WILL FURNISH THE LAND AND PERFORM THE FARMING OPERATIONS. THE SEWAGE USED WILL BE THAT ORIGINATING IN THE CITY OF VINELAND, HAVING A POPULATION OF ABOUT 10,000. IT IS EXPECTED THAT THE EXPERIMENTS WILL CONTINUE FOR AT LEAST FOUR YEARS.

JOHN G. SUTTON SPENT ABOUT TWO WEEKS IN WASHINGTON DISCUSSING WITH OTHER ENGINEERS THE PROBLEMS RELATING TO HIS PROJECT DEALING WITH PUMPING FOR DRAINAGE IN THE UPPER MISSISSIPPI VALLEY.

C. E. RAMSER WHO IS IN CHARGE OF THE GUTHRIE, OKLA. SOIL EROSION EXPERIMENT FARM REPORTS SATISFACTORY PROGRESS. TERRACE CONSTRUCTION HAS BEEN STARTED AND CONSIDERABLE MACHINERY ASSEMBLED AT THE FARM. MR. RAMSER IS NOW ASSISTED BY P. C. McGREW, R. A. NORTON AND A. A. GARRETT, THE LATTER ACTING AS THE PRACTICAL FARMER.

DURING THE MONTH THE REPORT "THE REACTION OF SWAMP FORESTS TO DRAINAGE IN NORTHERN MINNESOTA" HAS BEEN COMPLETED, APPROVED, AND TRANSMITTED TO THE MINNESOTA DEPARTMENT OF DRAINAGE AND WATERS FOR PUBLICATION. THIS IS A COOPERATIVE PROJECT WITH VARIOUS AGENCIES, DESIGNED TO DETERMINE THE EFFECT OF DRAINAGE ON FOREST GROWTH. VERY INTERESTING FACTS WERE DEVELOPED. THE TREES INVOLVED CONSISTED CHIEFLY OF BLACK SPRUCE, TAMARACK, AND CEDAR. AN AVERAGE OF 26 STUDIED AREAS SHOWED THE VOLUME OF GROWTH PER ACRE PER YEAR TO BE .23 CORD ON THE UNDRAINED PLOTS, AND .49 CORD ON THE DRAINED PLOTS. THE CONCLUSION WAS DRAWN, HOWEVER, THAT THE CASH VALUE OF THE BENEFITS OF THE PRESENT DRAINAGE SYSTEM IN NORTHERN MINNESOTA, AS A MEANS OF PROMOTING FOREST GROWTH, IS QUITE LIMITED.



A PROJECT JUST INAUGURATED INVOLVES THE STUDY OF THE DISTRIBUTION OF FERTILIZER AS APPLIED TO THE GROWING OF COTTON. THIS IS A COOPERATIVE PROJECT WITH THE SOIL IMPROVEMENT COMMITTEE OF THE NATIONAL FERTILIZER ASSOCIATION, THE BUREAU OF SOILS, AND THE AGRICULTURAL EXPERIMENT STATION OF CLEMSON COLLEGE, S. C. A RATHER ELABORATE PROGRAM HAS BEEN LAID OUT WHICH WILL INCLUDE STUDIES OF THE MECHANICAL EFFICIENCY OF THE VARIOUS COMMERCIAL DISTRIBUTORS AND THE IMPORTANT QUESTION OF THE LOCATION OF THE FERTILIZER WITH RESPECT TO THE SEED. THIS LATTER FEATURE WILL INVOLVE MAKING OBSERVATIONS ON THE CROP IN ITS VARIOUS STAGES OF DEVELOPMENT. G. A. CUMINGS HAS DIRECT CHARGE OF THIS PROJECT FOR THIS DIVISION.

A. H. SENNER, IN CONNECTION WITH THE PROJECT RELATING TO GREENHOUSE HEATING, IS VISITING A NUMBER OF THE IMPORTANT COMMERCIAL GREENHOUSES IN THE EAST FOR THE PURPOSE OF STUDYING PRESENT PRACTICES.

D. L. YARNELL HAS BEEN DETAILED TO ATTEND A SERIES OF LECTURES AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY TO BE DELIVERED BY THEO REHBOCK, THE EMINENT GERMAN AUTHORITY ON HYDRAULICS ESPECIALLY AS RELATED TO FLOW IN OPEN CHANNELS. THE OPPORTUNITY FOR MR. YARNELL TO ATTEND THIS COURSE IS VERY DESIRABLE IN VIEW OF HIS WORK AT IOWA CITY HYDRAULIC LABORATORY RELATING TO THE EFFECT ON FLOW OF BRIDGE PIERS IN STREAMS.

J. T. BOWEN HAS PREPARED, FOR THE NEW EDITION OF ENCYCLOPAEDIA BRITANNICA, AN ARTICLE ON "THE RELATION OF ELECTRICITY TO AGRICULTURE." HE HAS ALSO PREPARED FOR THE A.S.A.E. JOURNAL, A PAPER ENTITLED "HEAT TRANSFER IN DAIRY MACHINERY".

W. M. HURST HAS RECENTLY COMPLETED TWO BRIEF MANUSCRIPTS, ONE ON "DRYING ALFALFA HAY BY FORCED DRAFT WITH HEATED AIR" AND THE OTHER ON "DRYING GRAIN BY FORCED DRAFT WITH HEATED AIR". BOTH REPORTS ARE BASED ON FIELD EXPERIMENTS CONDUCTED BY MR. HURST.

MR. McCORMICK, ON MARCH 20, WILL DELIVER A RADIO TALK OVER THE NOON NETWORK ON THE SUBJECT "CONTROLLING THE CORN BORER WITH MACHINERY."

LA VIDA AGRICOLA, A FARM JOURNAL OF LIMA, PERU, IS PUBLISHING IN INSTALLMENTS A TRANSLATION OF THE GREATER PART OF THE BULLETIN ON IRRIGATION OF COTTON BY J. C. MARR AND R. G. HEMPHILL. IN AN INTRODUCTION TO THE FIRST INSTALLMENT, THE EDITOR OF LA VIDA AGRICOLA SAYS: "THE SUBJECT TREATED BY THE PUBLICATION IS OF VITAL INTEREST TO OUR COAST COUNTRY, IN WHICH COTTON CONSTITUTES THE PRINCIPAL AGRICULTURAL PRODUCTION. FOR THIS REASON AND BECAUSE IT DEALS WITH A WORK OF MUCH MERIT WE ARE GOING TO PUBLISH IN LA VIDA AGRICOLA (FARM LIFE) A RESUME OF THIS BULLETIN, TRANSLATING LITERALLY THOSE SECTIONS WHICH INTEREST US DIRECTLY AND OMITTING THOSE WHICH, DUE TO DIFFERENCE OF METHODS, HAVE NO DIRECT APPLICATION TO OUR COASTAL VALLEYS".

